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Yttrium-90 Radioembolization (Y-90 or TARE)

What to expect

This handout explains what Yttrium-90 radiotherapy is and what to expect when you have it done.

Why do I need this treatment?

Your doctors have found a tumor (or tumors) in your liver. These may have started in your liver (most likely *hepatocellular carcinoma, or HCC*) or spread to the liver from another part of your body. There are many treatments for liver tumors, but certain ones work best for certain people.

Our team of experts believes *Yttrium-90 (Y-90) transarterial radioembolization (TARE)* is the best option for you. Y-90 radioembolization sends radiation directly into the blood vessels that feed the tumors.

How does Y-90 radiotherapy work?

Radiation therapy has been used for decades in the treatment of many types of tumors. But the doses of external radiation needed to kill liver tumors would seriously harm the healthy parts of the liver.

Y-90 is a minimally invasive treatment. In this treatment, millions of tiny radioactive beads are injected directly into the arteries that supply blood to your tumor. These beads will stay in the blood vessels around your tumor(s). This allows very strong radiation to reach the tumors directly. There is very little effect on healthy parts of your liver or other tissues in the area such as your intestines or skin.

The beads emit radiation for about 10 days, but they will keep working for several months after they are injected.

How is the procedure done?

Y-90 radiotherapy is done by an *interventional radiologist*, a doctor who specializes in treating liver tumors with minimally invasive procedures done using X-ray guidance. The treatment is done in several steps (procedures) over the course of a few weeks.

Step 1: Mapping Angiogram

Step 1 is a procedure called a *mapping angiogram*. It takes 2 to 4 hours. During this procedure, the doctor is looking for three things:

- **Your “map.”** You will lie on an X-ray table. The only discomfort you will feel is a short burning sensation when the *local anesthetic* (numbing medicine) is applied to your skin.
 - A small plastic tube (*catheter*) is put into an artery in your groin or arm and guided to the liver arteries. X-rays will help your doctor guide this catheter to the right place. *Angiograms* (X-ray pictures of your blood vessels) are done to help your doctor see how blood flows to your liver and the tumors. This will tell your doctor if we can use Y-90 therapy for you.
- **Blood vessels going to nearby organs should not receive radiation.** Your doctor will use small metal wires (*coils*) to block off blood vessels that should not receive radiation.
- **Test dose.** A harmless *tracer agent* will be injected into your liver arteries similarly to the Y-90 infusion. Then, you will be taken to the nuclear medicine department down the hall for a scan. This scan will show how much of the tracer has left your liver and entered your lungs or other organs.

If too much tracer gathers in tissues outside your liver, Y-90 treatment will not work for you, and the procedure ends here. If the scan shows little or no tracer in the tissues outside your liver, you will be approved to go to Step 2.

Step 2: Y-90 Infusion

You will have another catheter placed in the artery in your groin or arm. Like the last time, the catheter will be guided to your liver.

Then, the beads coated with Y-90 will be slowly injected into your *hepatic* (liver) artery. This procedure takes about 1 hour.

Step 3: 2nd Y-90 Infusion (if needed)

You may require more than one infusion. If this is the case the doctor will inform you.

Step 4: Scans

About 6 weeks after your last Y-90 infusion, you will have a *magnetic resonance imaging* (MRI) or *computed tomography* (CT) scan. This scan will show how the tumors have responded to the treatment. Your doctor will review these scans, your blood test results, and your overall health. They will talk with you about any other treatments, if needed.

Are there any special precautions after the Y-90 infusions?

The radiation released by the Y-90 beads travels less than 1/2 inch. You will not emit radiation to others. In general, you do not need to limit your contact with others. Your doctor will let you know if you need to follow any special precautions.

Are there any risks or side effects?

The most common side effect after Y-90 radiotherapy is fatigue. This can be mild or severe. It can last up to a few weeks.

Other side effects include:

- Poor appetite
- Mild abdominal pain
- Slight fever
- Nausea

These symptoms should slowly go away over 2 to 4 weeks.

There are other much less common but sometimes serious side effects and complications. Your doctors will talk with you about these risks before you start treatment. Make sure all your questions are answered before your treatment begins.

Sedation

Before your Y-90 infusions, you will be given a *sedative* (medicine to make you relax) through an *intravenous line* (IV) in one of your arm veins. You will stay awake but feel sleepy. This is called *moderate sedation*. You will still feel sleepy for a while after the procedure.

For some people, using moderate sedation is not safe. If this is true for you, you will need *general anesthesia* (medicine to make you sleep during the procedure).

Let us know **right away** if you:

- Have needed anesthesia for basic procedures in the past
- Have sleep apnea or chronic breathing problems (you might use a CPAP or BiPAP device while sleeping)
- Use high doses of opioid pain medicine
- Have severe heart, lung, or kidney disease
- Cannot lie flat for about 1 hour because of back or breathing problems
- Have a hard time lying still during medical procedures
- Weigh more than 300 pounds (136 kilograms)

If you have any of these health issues, we may need to give you different medicines. Instead of a sedative, you might receive:

- Only a *local anesthetic* (numbing medicine), such as lidocaine.
- A local anesthetic plus a single pain or anxiety medicine. This is called *minimal sedation*.
- *General anesthesia* (medicine to make you sleep). This medicine is given by an anesthesia provider.

Before Your Procedure

A nurse will call you within 5 days of your procedure. The nurse will give you important instructions and answer any questions you have.

- If you do not understand English well enough to understand the instructions from the nurse or the details of the procedure, tell us right away. We will arrange for a hospital interpreter to help you. A family member or friend cannot interpret for you.
- Most patients need blood tests done on the day of the procedure. We will tell you if we need a blood sample before that day.
- If you take any blood-thinning medicines (such as Coumadin, Lovenox, Fragmin, or Plavix), you may need to stop taking the medicine for 3 to 9 days before your procedure. Do NOT stop these medicines unless your doctor or nurse has told you to do so. We will give you instructions as needed.
- You must arrange for a responsible adult to drive you home after your procedure and stay with you the rest of the day. You cannot drive yourself home or take a bus, taxi, or shuttle.

The day of your procedure

To prepare for sedation, follow these instructions exactly. Starting at midnight, the night before your procedure:

- Do not eat or drink anything.
- Do not take any of the medicines that you were told to stop before this procedure.
- If you must take medicines, take them with only a sip of water. Do not skip them unless your doctor or nurse tells you to.
- Do not take vitamins or other supplements. They can upset an empty stomach.

Please bring with you to the hospital a list of all the medicines you take.

Please plan to spend most of the day in the hospital. If there is a delay in getting your procedure started, it is usually because we need to treat other people who have unexpected and urgent health issues. Thank you for your patience if this occurs.

At the Hospital

A staff member will give you a hospital gown to put on and a bag to put your belongings in. You may use the restroom at that time.

A staff member will take you to a pre-procedure area. There, a nurse will do a pre-procedure assessment. A family member or friend can be with you in the pre-procedure area.

An IV line will be started. You will be given fluids and medicines through the IV.

An interventional radiology doctor will talk with you about the procedure, answer any questions you have, and ask you to sign a consent form, if you have not already done this.

After your procedure

You will be moved to a room on the short-stay unit on the hospital. Once you are settled into your room:

- Your family member or friend will be able to be with you.
- You will need to rest flat on your back for 2 to 6 hours to allow your groin or arm *puncture* (injection site) to heal.
- You will wear a wristband for 1-2 hours if your wrist was accessed for your procedure. You will be able to sit up during your recovery process.
- You will be able to eat and drink.

Before you get up to walk, we will assess you to make sure you can walk safely. A staff member will help you get out of bed. You will be able to go home when:

- You can eat, drink, and use the restroom
- Your nausea and pain are under control
- Your vital signs are stable

For 24 Hours

The medicine that you were given to make you sleepy will stay in your body for several hours. It could affect your judgment. You may also be lightheaded or feel dizzy. Because of this, for 24 hours:

- Do not drive a car.
- Do not use machines or power tools.
- Do not drink alcohol.

- Do not take medicines such as tranquilizers or sleeping pills, unless your doctor prescribed them.
- Do not make important decisions or sign legal documents.
- Do not be responsible for children, pets, or an adult who needs care.

To help your recovery:

- Do only light activities and get plenty of rest.
- Keep the puncture site covered with the dressing. Make sure it stays clean and dry.
- A responsible adult should stay with you overnight.
- Eat as usual.
- Drink lots of fluids.
- Resume taking your medicines as soon as you start to eat. Take **only** the medicines that your doctors prescribed or approved.

For 48 to 72 Hours

- Do not lift anything that weighs more than 5 to 10 pounds (a gallon of milk weighs almost 9 pounds).
- Do only moderate activities. This will allow your puncture site to heal.
- Avoid strenuous work. Do not do any exercise that increases your heart or breathing rate.

Dressing Care

- Keep your puncture site covered with the dressing for 24 hours. Make sure the site stays clean and dry.
- After 24 hours, remove the dressing and check the site for any signs that your wound needs care. See the list under “When to Call,” on page 7.
- You may shower after 24 hours. Do not scrub the puncture site. Allow warm soapy water to run gently over the site. After showering, gently pat the site dry with a clean towel.
- Do not apply lotion, ointment, or powder to the site. You may apply a new bandage.
- If you apply a new bandage, change it every day for the next few days. Always check the site when you remove the bandage.
- Do not take a bath, sit in a hot tub, go swimming, or allow your puncture site to be covered with water until it is fully healed.
- You may have a little discomfort at the site for 1 to 2 days.

When to Call

Call us right away if you have:

- Mild fever, pain, redness, swelling at the puncture site or dizziness
- Mild shortness of breath, chest tightness or chest pain
- Your arm or leg where the catheter was inserted changes color, is cool to the touch, or is numb.
- Any other non-urgent questions or concerns

Call 911 or go to the nearest emergency department if you have:

- Severe bleeding or any bleeding that does not stop after you have applied gentle pressure for about 15 minutes
- Drainage from your incision
- Fever higher than 101°F (38.3°C) or chills
- Shortness of breath that is getting worse
- New chest pain
- Dizziness
- Vomiting
- Yellowing of your eyes or skin

Who to Call

University of Washington Medical Center

Weekdays from 8 a.m. to 4:30 p.m., call the Interventional Radiology Department at 206.598.6209, option 2.

Questions?

Your questions are important. Call your doctor or healthcare provider if you have questions or concerns.

UWMC Montlake:
206.598.6209, option 2

After hours and on weekends and holidays, call 206.598.6190 and ask to page the Interventional Radiology resident on call.